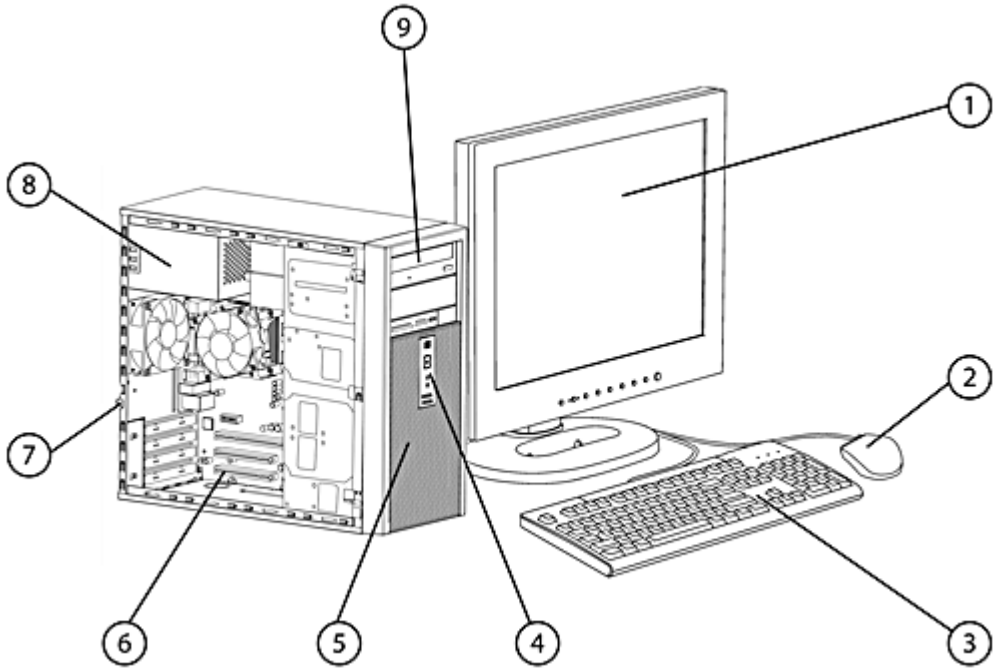
Overview

HP recommends
Windows Vista® Business

Microtower



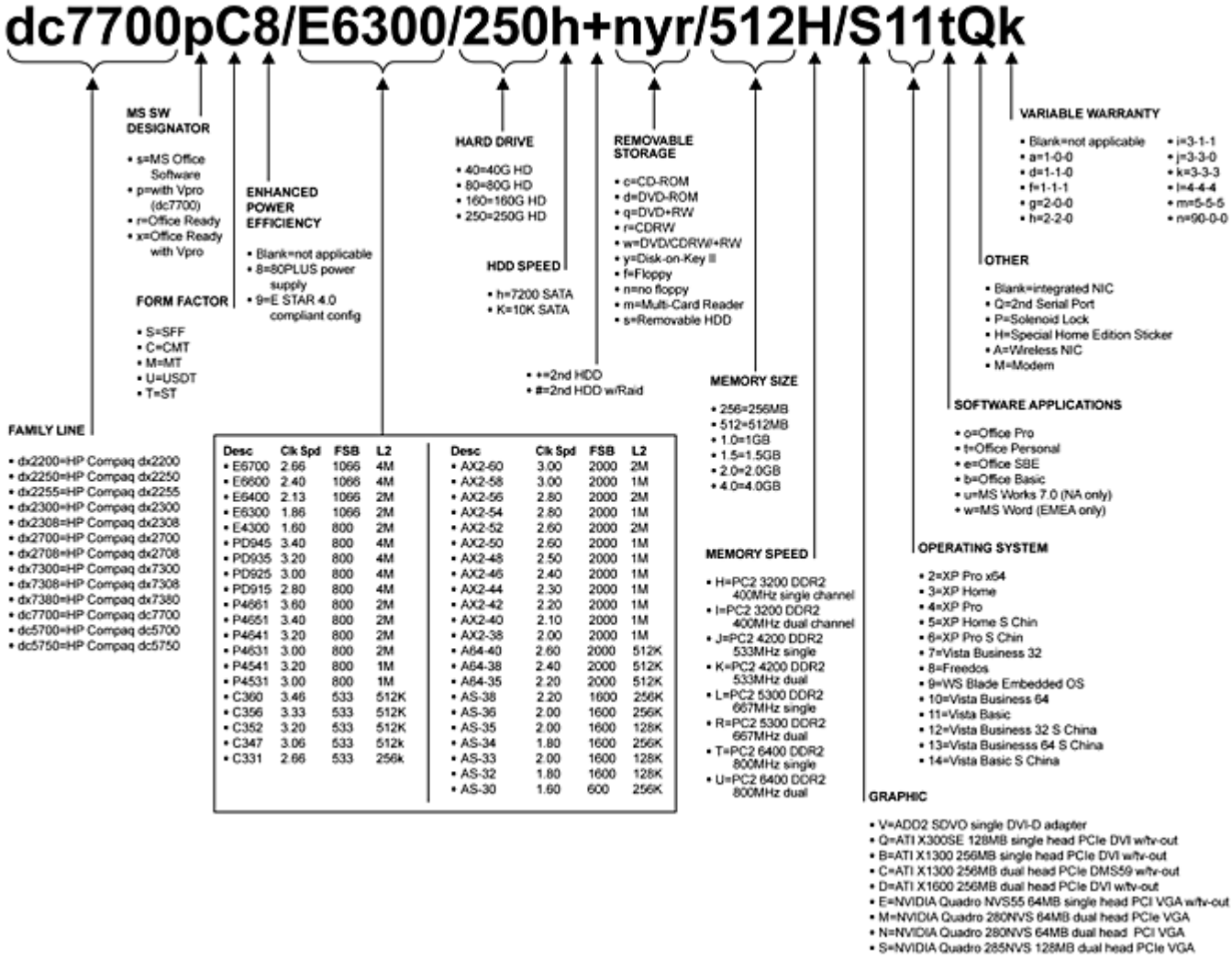
1. Monitor (sold separately)
2. PS/2 Scroll Mouse
3. HP Standard Keyboard
4. (2) USB 2.0 ports, audio ports
5. (2) internal 3.5" drive bays
6. (2) full-height PCI 2.3 slots, (1) PCI-E x1 slot, (1) PCI-E x16 slot
7. (4) USB 2.0 ports, (1) serial port, (1) parallel port, (2) PS/2, (1) RJ-45, (1) VGA, (1) audio in – (1) audio out – (1) MIC
8. 250-watt max power supply
9. (2) external 5.25" drive bays for optional optical drives; (1) external 3.5" drive bay for optional media reader or diskette drive

At A Glance

- AMD Athlon™ 64 X2 Dual-Core, Athlon 64, and Sempron™ processors with HyperTransport™ technology
- ATI Radeon Xpress 1150 chipset featuring integrated ATI graphics
- PCI Express I/O bus
- Integrated SATA 3.0-Gb/s controller
- Integrated Realtek RTL8139/810x Family Fast Ethernet (10/100) Network Connection
- Choice of hard drives and optical drives
- DDR2 SDRAM system memory
- Protected by HP Services. Certain restrictions and exclusions apply.

Model Key and Example

NOTE: This diagram is an example that illustrates how to read the model number. It is not intended to give every available configuration choice specified in the body of this document and may include references to modules that are out of date and no longer available.



Standard Features and Configurable Components

Processor and Speed
One of the following

AMD Sempron Processors with HyperTransport Technology:
AMD Sempron 3000+ Processor (1.6-GHz, 256K L2 cache, 1600-MHz FSB)
AMD Sempron 3200+ Processor (1.8-GHz, 128K L2 cache, 1600-MHz FSB)
AMD Sempron 3400+ Processor (1.8-GHz, 256K L2 cache, 1600-MHz FSB)
AMD Sempron 3500+ Processor (2.0-GHz, 128K L2 cache, 1600-MHz FSB)
AMD Sempron 3600+ Processor (2.0-GHz, 256K L2 cache, 1600-MHz FSB)
AMD Sempron 3800+ Processor (2.2-GHz, 256K L2 cache, 1600-MHz FSB)
AMD Sempron LE-1200 Processor (2.1-GHz, 512K L2 cache, 800-MHz FSB)
AMD Sempron LE-1250 Processor (2.2-GHz, 512K L2 cache, 800-MHz FSB)

AMD Athlon 64 Processors with HyperTransport Technology:
Athlon 64 3500+ Processor (2.2-GHz, 512K L2 cache, 2000-MHz FSB)
Athlon 64 3800+ Processor (2.4-GHz, 512K L2 cache, 2000-MHz FSB)
Athlon 64 4000+ Processor (2.6-GHz, 512K L2 cache, 2000-MHz FSB)

AMD Athlon X2 Dual-Core Processors with HyperTransport Technology:
Athlon X2 BE-2300 Processor (1.9-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon X2 BE-2350 Processor (2.1-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon X2 BE-2400 Processor (2.3-GHz, 2x512K L2 cache, 2000-MHz FSB)

AMD Athlon 64 X2 Dual-Core Processors with HyperTransport Technology:
Athlon 64 X2 Dual-Core 3800+ Processor (2.0-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 4000+ Processor (2.1-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 4400+ Processor (2.3-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 4800+ Processor (2.5-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 5000+ Processor (2.6-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 5200+ Processor (2.6-GHz, 2x1MB L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 5400+ Processor (2.8-GHz, 2x512K L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 5600+ Processor (2.8-GHz, 2x1MB L2 cache, 2000-MHz FSB)
Athlon 64 X2 Dual-Core 6000+ Processor (3.0-GHz, 2x1MB L2 cache, 2000-MHz FSB)

Operating System –
One of the following

Preinstalled

Genuine Windows Vista Business 32*
Genuine Windows XP Professional SP2
Genuine Windows XP Home SP2
Red Flag Linux (China Only)
Free DOS (not available in China)

* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit http://www.windowsvista.com/upgradeadvisor.

NOTE: Drivers for Windows Vista are continually being made available for download from http://www.hp.com. Windows Vista support for all hardware and software features of this product is planned by April 1, 2007.

Standard Features and Configurable Components

Application Software (availability varies by region)	Microsoft Office 2003 Basic Microsoft Office 2003 Small Business Microsoft Office 2003 Professional Microsoft Office 2007 Basic Microsoft Office 2007 SBE Microsoft Office 2007 Professional Microsoft Works HP Backup and Recovery Manager Roxio DigitalMedia Plus (by SONIC)* Intervideo WinDVD* Symantec Antivirus 2005 with 60 day Live Update Subscription (availability varies by region) Sun Java Runtime Environment Google Toolbar * Supporting software available with certain optical drive configurations
Hard Drives	80-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm) 160-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm) 250-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
System Memory	256-MB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (1 x 256-MB) 512-MB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (1 x 512-MB) 512-MB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (2 x 256-MB) 1-GB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (1 x 1-GB) 1-GB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (2 x 512-MB) 2-GB DDR2 Synch DRAM PC2-5300 (667-MHz) Non-ECC (2 x 1-GB)
Storage – One or more of the following (see Storage section below)	**Diskette Drive** 1.44-MB Diskette Drive **Media Reader** HP 16-in-1 Media Reader and additional USB 2.0 port **Optical Drives (Serial ATA)** PATA DVD-ROM Drive PATA CD-RW/DVD-ROM Combo Drive (not supported by Windows Vista) PATA DVD+/-RW (DL/DF) LightScribe Drive
Keyboard - One of the following	HP PS/2 Standard Keyboard HP USB Standard Keyboard

Standard Features and Configurable Components

Mouse - One of the following	PS/2 2-Button Scroll Mouse PS/2 2-Button Optical Scroll Mouse USB 2-Button Optical Scroll Mouse USB 2-Button Scroll Mouse
Audio	Realtek High Definition audio codec Internal PC speaker
Communication	Integrated Realtek RTL8139/810x Family Fast Ethernet (10/100) Network Connection Intel PRO/1000 PT PCIe Gigabit Ethernet NIC Agere 56K PCI Modem
Graphics	Integrated ATI graphics processor (provided by the Radeon Xpress 1150 chipset) ATI RADEON X1300 (256MB DH) PCIe Graphics Card ATI RADEON X1300 (256MB SH) PCIe Graphics Card
Miscellaneous	HP Firewire / IEEE 1394 PCI Card (full height)

System Details

Base Unit		• Micro ATX microtower chassis, including power supply and front bezel • Five (5) drive bays and four expansion slots • Microsoft operating system CD • Active type heatsink • 92 x 92 x 25 mm chassis fan • System board with ATI Radeon Xpress 1150 chipset, integrated Realtek RTL8139/810x Family Fast Ethernet (10/100) Network Connection, integrated graphics and audio, 2 PCI slots, 1 PCI Express x1 slot, 1 PCI Express x16 slot, 2 DDR2 DIMM memory slots • (4) Serial ATA data connectors • (2) Serial ATA data cables • (1) Parallel ATA data connector (no PATA data cables are included) • Product documentation on CD • Power cord
Slots	**PCI**	Two (2) full-height PCI 2.3 slots on PCA One (1) full-height PCI Express x1 slot on PCA One (1) full-height PCI Express x16 slot on PCA (for graphic cards)
	Memory Expansion	Two (2) DIMM slots (2 GB maximum memory support)
Bays	**Internal**	Two (2) 3.50"
	External	Two (2) 5.25″ One (1) 3.50″
USB Support		EHCI high-speed USB 2.0 controller Two (2) front ports; Four (4) rear ports, Two (2) internal ports on motherboard
Interfaces (Legacy)		One (1) parallel port One (1) serial port One (1) PS/2 keyboard port One (1) PS/2 mouse port One (1) analog VGA video port One (1) line in; one (1) line out; one (1) mic in One (1) RJ45 network port
Weight and Dimensions	**Chassis Dimensions** (H x W x D)	13.90 x 6.89 x 16.38 in (353 x 175 x 416 mm)
	Packaged Dimensions (L x W x H)	22.25 x 19.63 x 16.31 in (565.15 x 498.5 x 414.3 mm) (NA) 21.10 x 19.53 x 15.008 in (536.0 x 496.0 x 383.0 mm) (EMEA)
	System Weight	21.16 lb (9.6 kg)
	Shipping Weight	30.86 lb (14.0 kg)

System Details

Technology and Features	Memory Type	• PC2-5300 DDR2 SDRAM (667-MHz) non-ECC • 2 GB maximum system memory
	Hard Drive Interfaces Supported	• Serial ATA 3.0-Gb/s hard drives are supported
Chassis	Front Panel	• Power button • Power On LED • HDD Activity LED
	Cooling Solutions Supported	• Power Supply Fan (variable speed) • Aluminum active heatsink (variable speed) • Chassis fan (variable speed)
	Slots Supported	Four (4) full-height expansion slots
	Front I/O	Two (2) USB 2.0 ports
	Rear I/O	Standard Micro ATX I/O connectors, including four (4) USB 2.0 ports
	Drive Bays	• Two (2) 5-1/4″ external • One (1) 3-1/2″ external • Two (2) 3-1/2″ internal
	Internal Speaker	Standard
	Security	Padlock loop
	Power Supply	250-watt ATX Power Supply – PFC/non-PFC with a 115v/230v line switch (varies by country/region)
Unit Environment and Operating Conditions	General Unit Operating Guidelines	• Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range. • Leave a 4 in (10.2 cm) clearance on all vented sides of the computer to permit the required airflow. • Never restrict airflow into the computer by blocking any vents or air intakes. • Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air. • Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow. • If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.
	Temperature Range	• Operating: 50° to 95° F (10° to 35° C) • Non-operating: –22° to 140° F (–30° to 60° C)
	Relative Humidity	• Operating: 10% to 90% (non-condensing at ambient) • Non-operating: 5% to 95% (non-condensing at ambient)
	Maximum Altitude (unpressurized)	• Operating: 10,000 ft (3048 m) • Non-operating: 30,000 ft (9000 m)
	NOTE: Operating temperature is de-rated 1.0 deg C per 1000 ft (300 m) to 10,000 ft (3000 m) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.	
System Board	Processor	• Socket AM2 industry standard Micro ATX form factor

System Details

	• Support single AMD Athlon 64 X2 Dual-Core, Athlon 64, or Sempron processor
PWM	• Intersil 6566 VRM 10.1
Chipset	• ATI Radeon Xpress 1150 • ATI RS485 (Northbridge), ATI SB600 (Southbridge)
Super I/O	• W83627EHG
Front Side Bus Frequency	• 533/800 MHz
Memory	• DDR2 SDRAM • 2 x DIMM slots
Clock Generator	• ICS 951412GLFT
Integrated Graphics	• Built-in ATI graphics processor provided by the ATI Radeon Xpress 1150 chipset
Audio	• Realtek High Definition (HD) audio codec
LOM	• Realtek RTL8139/810x Family Fast Ethernet (10/100)
IDE	• Support all PIO modes • 1 x IDE ports support up to 2 devices • Support Ultra ATA 33/66/100
Serial	• Four Serial ATA interfaces support data transfer rates up to 3.0 Gb/s
Expansion Slots	• 2 x PCI 2.3 slots • 1 x PCI Express x1 slot • 1 x PCI Express x16 slot
BIOS	• LPC EEPROM
Industrial Standard	• PCI 2.3 compliant • USB 2.0
Rear Side I/O Ports	• 1 x PS/2 keyboard port • 1 x PS/2 mouse port • 4 x USB 2.0 ports • 1 x RJ-45 10/100 port • 1 x serial port • 1 x parallel port • 1 x DB 15 pin analog VGA port • 3 x audio ports
On Board I/O Interfaces	• 1 x ATX power connector • 1 x +12V power connector • 1 x Floppy connector • 1 x Front panel connector, Switch, LED (ON/Flash/OFF) • 2 x Fan headers for CPU, chassis, with voltage/fan speed control • 1 x ATAPI headers-CD IN • 1 x header to support 2 USB 2.0 ports at front side • 1 x header to support USB media reader
Board Size	• Micro-ATX, PCB Size: 9.6 x 9.0 in (24.38 x 22.86 cm) • 4-layer PCB with green colour

System Details

	Additional Features	• Bootable without keyboard, mouse or monitor • Keyboard/mouse/USB wake up • Support S3, S4 and S5 • ACPI status • Hardware monitor capability • CPU fan speed control
Network Interface		Integrated Realtek RTL8139/810x Fast Ethernet Network Controller
	Hardware Highlights	• PCI interfaces
	Features	• 10-Mbps and 100-Mbps operation
		Intel PRO/1000 PT PCIe Gigabit NIC
	Hardware Highlights	• PCI interfaces
	Features	• 10-Mbps, 100-Mbps and 1000-Mbps operation
Wireless		Wireless A+G PCI Card (full height bracket)
Power Supply		• ATX Power Supply – Passive PFC/non-PFC with a 115v/230v line switch • Passive Power Factor Correction (PFC) – with line switch set to 230V – No PFC in 115V line switch position • 90 to 140VAC, or 180 to 264VAC operating voltage range • 100 to 127VAC, or 200 to 240VAC rated voltage range • 50–60 Hz rated line frequency • 47–63 Hz operating line frequency range • 250 watt maximum rated power • 80-mm power supply fan – variable speed for optimum acoustics • (2) PATA device power connectors • (4) SATA device power connectors
Power Conservation 'Energy Saver'		• APM 1.2 support • Screen blanking • Hard drive 'Idle' mode • System Idle mode • ~2 watt power consumption in ES mode – suspend to RAM (S3) (instantly available PC) • Processor/Cache memory power-down (S3)

System Details

System Environmental Specs

- Values are subject to change without notification and are for reference only.
- Performance of system, options, and ancillary equipment will vary depending on the system configuration.
- Levels presented do not account for non-HP/Compaq installed hardware.

Ambient Air Temperature	Operating	50° to 95°F (10° to 35°C) at sea level with an altitude de-rating of 1.0°C per every 1000 ft (300 m) above sea level to a maximum of 8000 ft (2500 m), no direct sustained sunlight. Maximum rate of change is 77°F/Hr (25°C/Hr). The upper limit may be limited by the type and number of options installed.
	Storage	–22° to 140°F (–30° to 60°C) – Maximum rate of change: 410°F/Hr (210°C/Hr).
Humidity	Operating	10% to 90% relative humidity (Rh), 86°F (30°C) maximum wet bulb temperature, non-condensing
	Storage	10% to 95% relative humidity (Rh), 101.66°F (38.7°C) maximum wet bulb temperature, non-condensing
Altitude	Operating	0 to 10,000 feet (0 to 3048 metres) – This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1,000 ft/min (304.8 m/min).
	Non-Operating	0 to 30,000 feet (0 to 9,144 metres) – Maximum allowable altitude change rate is 1200 ft/min (365.76 m/min).
Shock	Listed are the levels of shock the product can withstand with NO damage being incurred. The values represent peak input acceleration during an 2~3 ms half-sine shock pulse, 11 ms trapezoidal shock pulse.	
	Non-Operating	40 g (Half-sine Shock) 40 g (Trapezoidal Shock)
Vibration	Listed are the levels of vibration the product can withstand with NO damage being incurred. The values represent a flat random vibration input acceleration profile across the given frequency range.	
	Operating	Random vibration at 5Hz@0.00025G^2/Hz, 10Hz@0.01G^2/Hz, 100Hz@0.01G^2/Hz, 300Hz@0.00001G^2/Hz 5Hz to 300Hz, (0.25G's nominal).
	Non-Operating	Random vibration at 0.008G^2/Hz, 10Hz to 500Hz, (2 Grms nominal).

System Details

Service and Support	On-site Warranty[Note 1]: One-year (1-1-1) limited warranty delivers one year of on-site, next business-day[Note 2] service for parts and labour and includes free telephone support[Note 3] 24 x 7. Global coverage[Note 2] ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. One-year onsite and labour are not available in all countries. NOTE 1: Certain restrictions and exclusions apply. NOTE 2: Global service response times are based on commercially reasonable best effort and may vary by country. NOTE 3: Technical telephone support applies only to HP-configured Compaq and third-party HP-qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

After-Market Options

Communications	**NICs**	
	Intel PRO/1000 PT PCIe Gigabit NIC Card	EH352AA
	Wireless LAN	
	HP Wireless A+G PCI Card	EA118AA
	Modems	
	Agere 2006 PCI High-Speed 56K International SoftModem	EK694AA
	Connectivity	
	HP Surge Protector, LAN & Printer Cable	RT174AA
Office 2007 Media-less License Kits (MLKs)	MS Office Basic Edition 2007 – Media-less License Kit	RZ361A#ABA
	MS Office Small Business Edition 2007 – Media-less License Kit	RZ365A#ABA
	MS Office Professional Edition 2007 – Media-less License Kit	RZ363A#ABA
Hard Disk Drives	HP 250-GB SATA 3.0-Gb/s Hard Drive	PY278AA
	HP 160-GB SATA 3.0-Gb/s Hard Drive	PY277AA
	HP 80-GB SATA 3.0-Gb/s Hard Drive	PY276AA
Removable Storage Devices	**Diskette Drive**	
	HP 1.44-MB Internal Diskette Drive	AG295AA
	HP 1.44-MB USB Diskette Drive – External	DC141B
	16-in-1 Media Reader	EM718AA
Input Devices	**Keyboards**	
	HP PS/2 Standard Keyboard	DT527A
	HP USB Standard Keyboard	DT528A
	Mice	
	HP PS/2 2-Button Scroll Mouse	DD440B
	HP PS/2 2-Button Optical Scroll Mouse	EY703AA
	HP USB 2-Button Optical Scroll Mouse	DC172B
	HP USB 2-Button Laser Mouse	GW405AA
Memory	HP 1-GB PC2-5300 (DDR2-667 MHz) DIMM	PX976AA
	HP 512-MB PC2-5300 (DDR2-667 MHz) DIMM	PX975AA
	HP 256-MB PC2-5300 (DDR2-667 MHz) DIMM	PX974AA
	NOTE: The HP Compaq dx2200 Microtower memory frequency is clocked at 630 MHz.	

After-Market Options

Audio	HP USB Powered Speakers	RD628AA
	Thin USB Powered Speakers	KK912AA (launching 4/14/08)
Graphics	ATI RADEON X1300 (256MB DH) PCIe Graphics Card	AH050AA
	ATI RADEON X1300 (256MB SH) PCIe Graphics Card	AG392AA
	HP DMS59 DVI Dual-head Connector Cable	DL139A
Optical Drives	HP PATA CD-RW/DVD-ROM Combo Drive	DL976B
	HP SATA CD-RW/DVD-ROM Combo Drive	AH046AA
	HP PATA DVD-ROM Drive	PR596A
	HP SATA DVD-ROM Drive	AH047AA
	HP PATA DVD+/-RW SuperMulti LightScribe Drive	GF343AA
Security	HP Business PC Security Lock Kit	TBD
	HP Smart Data Protection Service	BB731UT
	Kensington Compaq Security Lock – Single	PC766A
Miscellaneous Accessories	Belken USB to Serial Adapter	EM449AA
	HP FireWire / IEEE 1394 PCI Card	PA997A
	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)	DC177B
	DVI to DVI Cable	DC198A
	Local Area Network (LAN) cable	AH122AA
	Firewire (1394) Cable	AH123AA
	7-outlet Surge Protector	AG290AA#ABA

After-Market Options

Monitors	CRTs	3PO Offering
	Business LCD Monitors	
	HP L1506 15-inch LCD Monitor	PX848AA#ABA
	HP L1710 17-inch LCD Monitor	GS917AA#ABA
	HP L1750 17-inch LCD Monitor	GF904AA#ABA
	HP L1745 17-inch LCD Monitor	GE178AA#ABA
	HP L1910 19-inch LCD Monitor	GS918AA#ABA
	HP L1950 19-inch LCD Monitor	GG458AA#ABA
	HP LP1965 19-inch LCD Monitor	RA373AA#ABA
	HP LP2065 20-inch LCD Monitor	EF227A4#ABA
	Business Widescreen LCD Monitors	GX007AA#ABA
	HP L1908w 19-inch Widescreen LCD Monitor	GP536AA#ABA
	HP L2045w 20-inch Widescreen LCD Monitor	RD125AA#ABA
	HP L2208w 22-inch Widescreen LCD Monitor	GX007AA#ABA
	HP L2245w 22-inch Widescreen LCD Monitor	GX008AA#ABA
	HP LP2465 24-inch Widescreen LCD Monitor	EF224A4#ABA
	HP LP3065 30-inch Widescreen LCD Monitor	EZ320A4#ABA
	Business Widescreen LCD Monitor with Integrated Speakers	
	HP L1908wm 19-inch Widescreen LCD Monitor with Built in Integrated Speakers	KA214AA#ABA
	Business GSA Monitors	3PO Offering
	Business Touchscreen LCD Monitor	
	HP L5006tm 15-inch Touch Screen LCD Monitor	RB146AA#ABA
	Business LCD Monitor with Integrated Work Stand	
	HP L1908wi 19-inch Widescreen LCD Monitor plus Integrated Work Stand	GP537AA#ABA
	HP L1910i 19-inch LCD Monitor plus Integrated Work Stand	GS581AA#ABA
	Options	
	HP Flat Panel Speaker Bar	EE418AA
	HP Quick Release Kit	EM870AA
	HP Integrated Work Stand (stand alone)	GN783AA

Memory

DDR SYNCH DRAM NON-ECC MEMORY

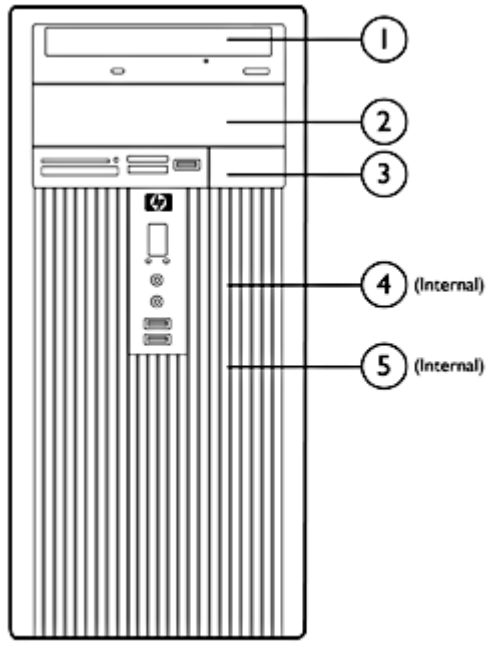
The ATI Radeon Xpress 1150 chipset supports non-ECC DDR2 memory up to PC2-5300 (667-MHz). Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations.

MAXIMUM MEMORY

Supports up to 2-GB of DDR2 SYNCH DRAM. Not all memory configurations possible are represented below.

DIMM Size	Slot 1	Slot 2
256-MB	256-MB	
512-MB	512-MB	
512-MB	256-MB	256-MB
1-GB	1-GB	
1-GB	512-MB	512-MB
2-GB	1-GB	1-GB

Storage



HP Compaq dx2250 Microtower Business PC

	Maximum Quantity Supported	Position Supported	Controller
Drive Support			
Diskette Drives	1	3	SIO
Media Reader	1	3	Internal USB 2.0 port
CD-ROM Drives	2	1, 2	IDE ATAPI
DVD-ROM Drives	2	1, 2	IDE ATAPI
CD-RW/Combo Drives	2	1, 2	IDE ATAPI
DVD+/-RW Drives	2	1, 2	IDE ATAPI
3.5" Serial ATA Hard Drives	2	4,5	SATA

Technical Specifications - Audio

Integrated Realtek High Definition (HD) Audio	Type	Integrated
	HD Audio compatible codec	Yes
	Audio Jacks	Mic-In
		Line-In
		Line-Out / Headphone Out
	Power Support	Digital: 3.3V
		Analog: 5V
	Other	Meets performance requirements for audio on PC99/2001 systems High quality differential CD input

Technical Specifications - Communications

Intel PRO/1000 PT PCIe Gigabit NIC	Connector	RJ-45
	Controller	Intel 82572EI Gigabit Ethernet Controller
	Memory	Integrated Dual 48K configurable transmit receive FIFO Buffers
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802,1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI-E 1.0a
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T
	Boot ROM support	Yes
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)
	Environmental	Operating temperature 32° to 131°F (0° to 55° C)
		Operating humidity 85% at 131° F (55° C)
	Dimensions	6.4 x 2.6 x 0.8 in (16.3 x 6.6 x 1.9 cm)
	Management capabilities	ASF, WOL, PXE, DMI, WFM 2.0.

HP Wireless A+G PCI	Dimensions	4.99 x 2.54 x 0.71 in (126.8 x 64.4 x 18.0 mm)
	Weight	0.268 lb (65 g)
	Controller system interface	Atheros AR5414X chipset PCI Spec 2.2
	Network standard	IEEE 802.11a/b/g
	Frequency band	5.1500 to 5.8500 GHz
		2.4000 to 2.4835 GHz
		2.4465 to 2.4835 GHz
		2.4000 to 2.4697 GHz
	Operating temperature	32° to 140° F (0° to 60° C), operating
	Storage temperature	-4° to 176° F (-20° to 80° C), non-operating
	Humidity	10% to 85% non-condensing
	Operating voltage	5V ± 5%
	Power consumption	Tx/Rx peak 560/250mA @ 3.3V (max.)
	Output power (approximately)	15 dBM ±2dB
	Receive sensitivity	-90dBm at 11 Mbps (typical)
	Data transfer rate	Standard rates of 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 48, 54 and Super AG Mode108-Mbps

	Spreading	DSSS (Direct Sequence Spread Spectrum)
	Security	64(40h) bit, 128(104h) bit, WPA, IEEE802.1X, AES-OCB, AES-CCM, Microsoft PEAP,TKIP, WEP
	Antenna	External 5dBi antenna
	Throughput	**108 Mbps** (only with Belkin 54G or above router that supports 108 Mbps speed) — 200 ft (60.96 m) – Indoor
		54 Mbps — 200 ft (60.96 m) – Indoor
		11 Mbps — 200 ft (60.96 m) – Indoor
	Certifications	Wi-Fi certified
	Certifications for use by country	North America: United States, Canada
Agere 56K PCI Modem	Data Transmission	56,000 Kbps maximum downstream data NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
	Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/300 b/s
	Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
	Power Management	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
	Upgradeability	Driver upgradeable for future enhancements
	Video	ITU-T V.80 video ready interface
	Other	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	Operating Temperature	32° to 158° F (0° to 70° C)
	Operating Humidity	20% to 90%, non-condensing
	Power	Requires a 3.3-V auxiliary power rail on PCI bus Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
	Chipset	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
	Dimensions (L X H)	Complies with PCI low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets

Technical Specifications - Communications

Connection	Single RJ-11 connector
Other Features	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
Telecom	FCC Part 68
Health	Bare PCB material compliant to 94V-0 or better (marked as such)
Other	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

Integrated ATI graphics provided by the Radeon Xpress 1150 chipset	3D/2D Controller	Full Microsoft DirectX® 9 based with Shader 2.0 support, full precision floating point pixel pipeline, 2x, 4x, or 6x Anti-Aliasing, hidden surface removal using 16, 24, or 32-bit Z-Buffering, and support for 12-bit per pixel formats. Support for Microsoft's DirectDraw, Double Buffering, Virtual Sprites, Transparent Blit, and Masked Blit.
	VGA/DVI Controller	Integrated
	Bus Type	PCI Express™ x16 for optional graphics upgrade
	RAMDAC	Integrated
	Memory	HYPERMEMORY™ technology offers optional dedicated Local Frame Buffer configuration for a 32-bit or 64-bit interface and up to 128MB of memory. UMA mode operation uses from 32MB up to 256MB of shared system memory.
	Controller Clock Speed	400 MHz
	Overlay Planes	Back end overlay supporting Motion Adaptive De-Interlacing
	Maximum Colour Depth	32 bits/pixel
	Maximum Vertical Refresh Rate	Supports resolutions up to 2045x1536 @ 32bpp
	Multi-display Support	SURROUNDVIEW™ support for up to three monitors with an ATI discrete graphics card. One display is supported via the integrated VGA connector. An additional 2 displays can be supported via the ATI discrete graphics card. Dual independent display modes are supported.
	Graphics/Video API Support	Microsoft DirectX 9, DirectXVA®, VMR7, VMR9, GDI/GDI+; OpenGL® 1.4.

ATI RADEON X1300 PCIe Graphics Card (256 MB)	Bus type	PCI Express (x16 lanes)	
	Maximum vertical refresh rate	85 Hz	
	Display support	Integrated 400 MHz RAMDAC	
	Display max resolution	2048 x 1536	
	Board display options	DVI-I + TV DVI-I supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVI-I connector) DVI-I supports analog CRT or flat panel (with VGA connector and DVI-I to VGA dongle) TV connector is a 4-pin mini-DIN S-video connector	
	Board configuration	Specification	Description
		Graphics Chip	RV515
		Core clock	450 MHz
		Memory clock	250 MHz
		Frame buffer	256 MB DDR2
	Core power	25 W (Max board power)	

Option kit contents	• ATI RADEON X1300 PCIe graphics card with full height bracket attached • Low profile bracket • DVI-to-VGA Adapter • Software CD with graphics drivers • Warranty documentation
Compliance standards	EMC Emissions: a) FCC Part 15, Subpart B – Unintentional Radiators, Class B Computing Devices for Home & Office Use b) CISPR22: 1997/EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment EMC Immunity: CISPR 24:1997/EN 55024:1998 – Information Technology Equipment – Immunity Characteristics – Limits and Methods of Measurement. Safety: UL 60950 (USA) & EN 60950 (EU): Safety of Information Technology Equipment, Including Electrical Business Equipment. All boards meet UL PCB flammability requirements.

HP PS/2 or USB Standard Keyboard	Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		Weight	2 lb (0.9 kg) minimum
	Electrical	Operating voltage	+ 5VDC ± 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		ESD	CE level 4, 15-kV air discharge
		EMI – RFI	Conforms to FCC rules for a Class B computing device
		MicrosoftPC 99 – 2001	Functionally compliant
	Mechanical	Languages	38 available
		Keycaps	Low-profile design
		Switch actuation	55-g nominal peak force with tactile feedback
		Switch life	20 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	For all double-wide and greater-length keys
		Cable length	6 ft (1.8 m)
		Microsoft PC 99 – 2001	Mechanically compliant
		Acoustics	43-dBA maximum sound pressure level
	Environmental	Operating temperature	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications - Input/Output Devices

HP 2-Button Scroll Mouse (PS/2 or USB)	Scroll Wheel	8 mm	
	Maximum Rotation Speed	30 mm/s	
	Switch Type	Light force micro-switch	
	Switch Life	1 million operations	
	Mechanical Life	Minimum 200,000 revolutions	
	Environmental	Operating Temperature	50° to 122° F (10° to 50° C)
		Non-operating Temperature	-22° to 140° F (-30° to 60° C)
		Operating Humidity	10% to 90% (non condensing at ambient)
		Non-operating Humidity	20% to 80% (non condensing at ambient)
		Operating Shock	40 g, 6 surfaces
		Non-operating Shock	80 g, 6 surfaces
		Operating Vibration	2 g peak acceleration
		Non-operating Vibration	4 g peak acceleration
	Electrical	Operating Voltage	+ 5VDC ± 10%
		Power Consumption	15mA
		System Consumption	PS/2 mini-din connector
		ESD	CE level 4, 15 kV air discharge
		EMI-RFI	Conforms to FCC rules for a Class B computing device
		PC98	Functionally compliant
	Mechanical	Resolution	400 ± 20% DPI
		Tracking Speed	10 in/s maximum
		Acceleration	100 in/s
		Switch Actuation	85 g nominal peak force
		Switch Life	1,000,000 operations (using Hasco modified tester)
		Cable Length	2 m
		PC98-99	Mechanically compliant
	Regulatory Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BCIQ, C-Tick	

Serial ATA Hard Drives (7200 rpm)	**80 GB**	**Capacity**	80,026,361,856 bytes	
		Height	1 in (2.6 cm)	
		Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA	
		Synchronous Transfer Rate (Maximum)	3.0 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	1.0 ms
			Average	8.5 ms
			Full-Stroke	18 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	156,301,488	
		Operating Temperature	32° to 140° F (0° to 60° C)	
	160 GB	**Capacity**	160,041,885,696 bytes	
		Height	1 in (2.6 cm)	
		Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA	
		Synchronous Transfer Rate (Maximum)	3.0 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	1.0 ms
			Average	8.5 ms
			Full-Stroke	18 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	312,581,808	
		Operating Temperature	32° to 140° F (0° to 60° C)	

Technical Specifications - Hard Drives

250 GB	Capacity	250,059,350,016 bytes	
	Height	1 in (2.6 cm)	
	Width	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA	
	Synchronous Transfer Rate (Maximum)	3.0 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.8 ms
		Average	<9.0 ms
		Full-Stroke	=17 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	41° to 131° F (5° to 55° C)	

HP PATA DVD-ROM Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	PATA/ATAPI	
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	1.54 lb (0.7 kg)	
	Read speeds	DVD+R/-R/+RW/-RW/+R DL	Up to 8X
		DVD-ROM	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Removable Storage - Media Compatibility - DVD-ROM		
	Media	Read	Write
	CD-ROM	Yes	No
	CD-R	Yes	No
	CD-RW	Yes	No
	DVD-ROM	Yes	No
	DVD-ROM DL	Yes	No
	DVD+R	Yes	No
	DVD+R DL	Yes	No
	DVD+RW	Yes	No
	DVD-R	Yes	No
	DVD-RW	Yes	No
	Access times (typical reads, including setting)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
		Cache Buffer	256 KB (minimum)
		Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)
	Power	Source	Four-pin, DC power receptacle
		DC Power Requirement	5 VDC ± 5% – 100 mV ripple p-p
			12 VDC ± 5% – 200 mV ripple p-p
		DC Current	5 VDC – <800 mA typical, < 1000 mA maximum
			12 VDC –< 870 mA typical
	Audio output	Line-Out	0.7 VRMS
		Signal-to-Noise Ratio	74 dB
		Channel Separation	65 dB

	Environmental (all conditions non-condensing)	Temperature (operating)	41° to 122° F (5° to 50° C)
		Relative Humidity (operating)	10% to 90%
		Maximum Wet Bulb Temperature (operating)	86° F (30° C)
	Option kit contents	HP PATA DVD-ROM Drive, InterVideo WinDVD Version 5, and installation guide.	
HP PATA DVD+/-RW LightScribe Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	PATA/ATAPI	
	Disc recording capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	1.54 lb (0.7 kg)	
	Write speed	DVD+R	Up to 16X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 8X
		DVD-R DL	Up to 4X
		DVD-R	Up to 16X
		DVD-RW	Up to 6X
		CD-R	Up to 48X
		CD-RW	Up to 32X
	Read speed	DVD+RW, DVD-RW, DVD+R DL, DVD-R DL	Up to 8X
		DVD-ROM, DVD+R, DVD-R	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
		Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)
	Power	Source	Four-pin, DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
			12 VDC (< 600 mA typical, 1400 mA maximum)
		Total Drive Power (standby mode)	< 2.5 Watt

Technical Specifications - Optical Storage

	Audio output	Line-Out	0.7 VRMS
		Signal-to-Noise Ratio	74 dB
		Channel Separation	65 dB
	Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)
		Relative humidity	10% to 90%
		Maximum wet bulb temperature	86° F (30° C)
	Option kit contents	16X DVD+/-RW LightScribe drive, LightScribe software, Roxio Easy Media Creator Version 9, InterVideo WinDVD Version 5, installation guide, and DVD+R media.	
HP PATA DVD+/-RW LightScribe Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	PATA/ATAPI	
	Disc recording capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	1.54 lb (0.7 kg)	
	Write speed	DVD+R	Up to 16X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 8X
		DVD-R DL	Up to 4X
		DVD-R	Up to 16X
		DVD-RW	Up to 6X
		CD-R	Up to 48X
		CD-RW	Up to 32X
	Read speed	DVD+RW, DVD-RW, DVD+R DL, DVD-R DL	Up to 8X
		DVD-ROM, DVD+R, DVD-R	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
		Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)
	Power	Source	Four-pin, DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
			12 VDC (< 600 mA typical, 1400 mA maximum)

	Total Drive Power (standby mode)	< 2.5 Watt
Audio output	Line-Out	0.7 VRMS
	Signal-to-Noise Ratio	74 dB
	Channel Separation	65 dB
Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative humidity	10% to 90%
	Maximum wet bulb temperature	86° F (30° C)
Option kit contents	16X DVD+/-RW LightScribe drive, LightScribe software, Roxio Easy Media Creator Version 9, InterVideo WinDVD Version 5, installation guide, and DVD+R media.	

Technical Specifications - Removable Storage

HP 1.44-MB Diskette Drive	Size	3.5 in (8.89 cm)	
	LED Indicators (front panel)	Green	
	Read/Write Capacity per Diskette (high/low)	1.44 MB/720 KB	
	Drive Height	One-third	
	Drive Rotation	300 rpm	
	Transfer Rate (high/low)	500/250 KB/s	
	Bytes/Sector	512	
	Sectors/Track (high/low)	18/9	
	Tracks/Side (high/low)	80/80	
	Access Times	Track-to-Track (high/low)	3/6 ms
		Average (high/low)	94/173 ms
		Settling Time	15 ms
		Latency Average	100 ms
	Cylinders (high/low)	80/80	
	Read/Write Heads	Two	

HP 16-in-1 Media Card Reader	USB interface	USB 2.0 High-speed device via PCI card or pass -through via internal USB port of system board
	Advance protocol support	• Supports hardware ECC (Error Correction Code) function • Supports hardware CRC (Cyclic Redundancy Check) function • Supports MS 4-bit parallel transfer mode • Supports MS-PRO 4-bit parallel transfer mode • Supports SD 4-bit parallel transfer mode • Supports high-speed 50 MHz SD 4-bit card (version 1.1) • Support high-speed 52 MHz MMC 8-bit card (version 4.x)
	Supported media types	• Supports CompactFlash Card Type I (CF I), CompactFlash Card Type II (CF II),MicroDrive (MD) • Supports 3.3V SmartMedia Card (SM), SmartMedia ROM (SM ROM), xD-Picture Card (xD) • Supports Secure Digital Card (SD), Secure Digital ROM Card (SD ROM), miniSD, MultiMediaCard (MMC), Secure MultiMediaCard (Secure MMC), ROM Type MultiMediaCard (MMC ROM), Reduced Size MultiMediaCard (RS MMC), MultiMediaCard 4.0 (MMC Plus), Reduced Size MultiMediaCard 4.0 (MMC Mobile) • Support Memory Stick (MS), Memory Stick ROM (MS ROM), MagicGate Memory Stick (MG), Memory Stick Select, Memory Stick Duo (MS Duo), Memory Stick PRO (MS-PRO), Memory Stick PRO Duo (MS PRO Duo)
	Mechanical	Length (3.5") 124.7 cm Width (3.5") 101.6 cm Height (3.5") 25.4 cm Length (5.25") 171.6 cm Width (5.25") 148.9 cm

	Height (5.25")	42.7 cm
Environmental	Operational environmental extremes	Test Parameters/Conditions - Power applied, unit operating on system ±5% nominal supply voltage. 10°C 10% R.H. = 24 hours 10°C 90% R.H. = 24 hours 20°C 90% R.H. = 24 hours 30°C 90% R.H. = 24 hours 40°C 90% R.H. = 24 hours 50°C 90% R.H. = 24 hours 50°C 10% R.H. = 24 hours
	Storage environmental extremes	Test Parameters/Conditions 60°C @ 80% R.H. for 96 hours -30°C @ 20% R.H. for 48 hours No power applied Delta °C < 1.0°C/min Delta % R.H. < 1.5% R.H./min
Approvals	USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0, Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.2 FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T	

Environmental Data

Eco-Label Certifications & declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- IT ECO declaration

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Microtower Desktop model included:

Processor	AMD Sempron 3600+
Memory	512-MB DDR2 Synch DRAM (2 x 256-MB)
Hard Drive	80-GB SATA (7200 rpm)
Optical Drive	HP DVD ROM
Other Storage	16-in-1 Media Reader
Communications	Integrated Realtek 8100C Fast Ethernet Network Connection, Agere 56K PCI Modem

Energy Consumption

Microtower

	115VDC	230VDC	100VDC
Normal Operation	61.1 W	61.0 W	60.3 W
Sleep	2.88 W	2.9 W	2.75 W
Off	1.63 W	1.68 W	1.51 W

Heat Dissipation*

	115VDC	230VDC	100VDC
Normal Operation	208.53 BTU/hr	208.19 BTU/hr	205.80 BTU/hr
Sleep	9.83 BTU/hr	9.9 BTU/hr	9.37 BTU/hr
Off	5.56 BTU/hr	5.73 BTU/hr	5.15 BTU/hr

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

	Sound Power (L_{Wad}, bels)	Deskside Sound Pressure (L_{pAm}, decibels)
Idle	4.18	31.4
Fixed Disk (random writes)	4.21	35.9
Optical Drive (sequential reads)	5.2	46

Longevity and Upgrading

This product is designed to be upgraded, possibly extending its useful life by several years. Spare parts are available throughout the warranty period and for up to 15 months after the end of production. Upgradeability features contained in the product include:

- 6 USB ports
- 2 external 5.25" drive bays
- 2 internal 3.5" drive bays
- 1 external 3.5" drive bay
- 2 empty standard PCI slots
- 1 empty standard PCI-EX1 slot
- 1 empty standard PCI-EX 16 slot

- 2 memory slots
- 1 Serial port
- 1 Parallel port

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm by weight.

Battery size: CR2032 (coin cell)
Battery type: Lithium

Additional Information

This product is in compliance with the IEEE 1680 (EPEAT) standard at the SILVER level, see http://www.epeat.net.

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 70.6% recycled materials (by wt.)

This product is 70.6% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
  - Corrugated Paper 1840 g
- Internal:
  - LDPE Foam 280 g
  - LDPE Bag 50 g

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at: http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde

- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report:
http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html
Eco-label certifications:
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html
ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Technical Specifications - Environmental Data

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